

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-34 (Cancelled)

35. (New) A method of determining the suitability of a sample of mammalian semen for cooling and/or cryopreservation or storage, said method comprising:

- (a) providing said sample of semen;
- (b) determining the level of a hydrophobic stimulator of 11β -HSD activity in said sample; and
- (c) assessing, from the level of 11β -HSD stimulator determined, the suitability of the semen sample for cooling and/or cryopreservation or storage.

36. (New) A method according to claim 35 wherein said sample of semen is from a human male.

37. (New) A method according to claim 35 wherein said sample of semen is of rodent, bovine, equine, porcine or ovine origin.

38. (New) A method according to claim 35 wherein said hydrophobic stimulator of 11β -HSD activity elutes in a fraction from a C18 column at either 50 to 75% or 95 to 100% methanol.

39. (New) A method according to claim 35 wherein said determination of the level of hydrophobic stimulator of 11β -HSD activity is by contacting said sample of semen with 11β -HSD present in another body fluid or another body derived substance, and determining the effect of the hydrophobic stimulator on the activity of 11β -HSD.

40. (New) A method according to claim 39 wherein said contacting is performed by adding 11β -HSD and a substrate of 11β -HSD to said semen sample.

41. (New) A method according to claim 40 wherein said substrate is ^3H -cortisol or ^3H -corticosterone.

42. (New) A method according to claim 35 wherein said other body derived substance is a homogenised animal organ.

43. (New) A method according to claim 42 wherein said animal organ is an animal kidney.

44. (New) A method according to claim 43 wherein said animal organ is a rodent organ.

45. (New) A method according to claim 44 wherein said rodent organ is a rat organ.

46. (New) A method according to claim 45 wherein said rat organ is a rat kidney.

47. (New) A method according to claim 35 wherein a control assay is conducted to allow for any 11β -HSD already present in said sample from said male individual.

48. (New) A method of improving the survival rate of sperm or promoting the viability of sperm, said method comprising:

- (a) providing a sample of semen; and
- (b) combining said sample of semen with an increased concentration of a hydrophobic stimulator of 11β -HSD activity; and optionally
- (c) storing said combination of semen and hydrophobic stimulator for a period of time.

49. (New) A method according to claim 48 wherein said hydrophobic stimulator of 11β -HSD activity elutes in a fraction from a C18 column at either 50 to 75% or 95 to 100% methanol.

50. (New) A method according to claim 48 wherein said increased concentration of hydrophobic stimulator of 11β -HSD activity is an amount or concentration of 11β -HSD stimulator which, when assessed at a dilution of 10% by volume, could increase 11β -HSD activity by 100% or more relative to enzyme activity measured in the absence of the stimulator.

51. (New) A method according to claim 48 further comprising

- (a) a step of cooling said combination of semen and hydrophobic stimulator of 11 β -HSD activity to 5°C or below; and /or
- (b) a step of freezing said combination of sperm and hydrophobic stimulator of 11 β -HSD activity.

52. (New) A method according to claim 48 wherein sperm is removed from said sample of semen and said sperm is combined with an increased concentration of a hydrophobic stimulator of 11 β -HSD activity.

53. (New) A method according to claim 48 wherein said combination of semen and hydrophobic stimulator is stored without cooling or cryopreservation.

54. (New) A method according to claim 48 wherein 85% or more of said human sperm, 40% of said pig sperm, 50% of said horse sperm, 70% of said cow sperm, 50% said sheep sperm or 60% of said rodent sperm survive said cooling and/or cryopreservation or said storage.

55. (New) A method of fertilizing an oocyte *in vitro* comprising contacting said oocyte with sperm obtained by a method according to claim 48.

56. (New) A method of performing an assisted conception/reproductive procedure comprising contacting an oocyte with sperm obtained by a method according to claim 48 under conditions which allow fertilization of the oocyte.

57. (New) A method according to claim 56 wherein said assisted conception/reproductive procedure is an IVF procedure comprising contacting said oocyte and said sperm *in vitro* and introducing the fertilized oocyte or zygote or embryo derived therefrom into a female such that it may develop to term.

58. (New) A method according to claim 56 wherein said assisted conception/reproductive procedure is an artificial insemination (AI) procedure.

59. (New) A method according to claim 58 wherein said artificial insemination is an intra-uterine insemination (IUI) procedure.

60. (New) A method according to claim 56 wherein said assisted conception/reproductive procedure is an intracytoplasmic sperm injection (ICSI) procedure.

61. (New) A method of obtaining a hydrophobic product that improves the tolerance of mammalian semen to cooling and/or cryopreservation or storage, comprising the steps of:

- (a) providing a sample of semen;
- (b) removing the seminal plasma from the sperm; and
- (c) fractionating the seminal plasma of (b) to enrich for said product.

62. (New) A method according to claim 61 wherein said seminal plasma is removed from said sperm by centrifugation, Percoll centrifugation or Percoll swim-up.

63. (New) A method according to claim 61 wherein said fractionating of said seminal plasma is on a C18-methanol affinity chromatography column, TLC, HPLC or FPLC.

64. (New) A product obtainable by fractionation of mammalian seminal plasma and having a stimulatory effect on 11 β -HSD activity, which improves the tolerance of semen to cooling and/or cryopreservation or storage.

65. (New) A product according to claim 64 which is obtainable by a method cited above.

66. (New) Use of a product of claim 64 to improve the tolerance of semen to cooling and/or cryopreservation or storage.

67. (New) A method of treatment of inflammatory disease by administering an amount of a product of claim 64 effective to increase the survival of topically applied cortisol or cortisol already circulating within the bloodstream.

68. (New) A method of treatment of inflammatory disease by administering an amount of a product of claim 64 effective to stimulate the production of cortisol from circulating cortisone by stimulation of 11 β -HSD1.